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Nonverbal Play and Intelligence in Normal Children

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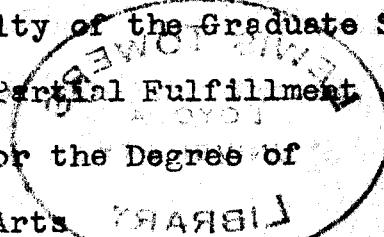
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NONVERBAL PLAY AND INTELLIGENCE
IN NORMAL CHILDREN

by

Michael J. Downs

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment
of the Requirements for the Degree of
Master of Arts



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1973

Life

Michael J. Downs was born in Rochester, New York on June 15, 1944.

He was graduated from McQuaid High School in Rochester, New York in June of 1962. He attended Boston College in Boston, Massachusetts from September 1964 through June 1968 and there received his Bachelor of Arts degree. His graduate studies in psychology were begun at Loyola University in September, 1968.

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Chapter I

Introduction

The first part of this thesis discusses the problems of assessing the intelligence of children for whom existing tests are not appropriate because of the child's difficulties with language and/or with responding to the demands of an interpersonal situation. The second part proposes a possible solution to these problems through the use of a measure of the child's play behavior in an unstructured setting.

Problems of measurement

Rapport between the examiner and the subject is a major problem that affects the testing of children who are culturally different, deficient in language function or severely emotionally disturbed. Anastasi (1968) defined rapport as "the examiner's efforts to arouse the subject's interest in the test, elicit his cooperation and ensure that he follows the standard test instructions (p. 34)." The examiner wants to be sure that the subject is involved in the test to a sufficient degree to allow his test results to reflect his abilities as accurately as possible and to permit comparisons with others who have taken the test.

Techniques for establishing rapport vary with the nature of the test and with the age and characteristics of the subjects. Goodenough (1949) discussed the special factors that pertain to

the testing of preschool children. These included shyness with strangers, distractibility, and negativism. She suggested a number of ways to make the child comfortable and cooperative enough to take the test.

In measuring intelligence, Palmer (1970) demonstrated the value of having the examiner spend enough time with the child to make certain that the child feels comfortable with the examiner, an approach which presumably minimizes suspicion and maximizes cooperation. The techniques suggested by Goodenough, Palmer, and others are designed to minimize the negative influences of the examiner on the test responses.

The children considered here, however, are not able to develop rapport with the examiner, because of their difficulty in communication and/or interpersonal relationships. Another problem that affects the testing of such children is the demand of the testing situation. Every formal test may present an implied threat to an individual's prestige. This threat often appears to be more pronounced with the deviant child and the pressure of the test often produces excessive anxiety that adversely affects his performance.

The fact that most of the standardized intelligence tests (i.e. Wechsler Preschool and Primary Scale of Intelligence (WPPSI), Wechsler Intelligence Scale for Children (WISC), and the Stanford-Binet Intelligence Scale (SB)) have a high verbal component to them presents another obstacle to testing disturbed

or handicapped children who are nonverbal or have little facility with language. These tests require that the subject have reasonable levels of receptive and/or expressive language. As the child shows language deficits or is completely nonverbal it is apparent that the measure will provide an inadequate index of intellectual functioning.

In summary, the problem of rapport, the demands of the testing situation, and the relative nonverbalness of the child are three problems that affect testing the intelligence of children with language or relationship difficulties.

The examiner also has the additional problem of interpreting the child's test results. With a presumably normal child, test performance can be directly compared with that of other children in the standardization group. There is no standard reference group with which to compare the test results of culturally different, language disordered, or emotionally disturbed children. The issue from the beginning of this discussion is how to make a valid intellectual assessment of a child who is nonverbal and unable to take tests in a standard fashion.

Alternatives to Standardized IQ Tests

For many years psychologists have been interested in the relationship between nonverbal behavior and intellectual functioning. No one has thought that intelligence has to be measured in only verbal ways. A number of tests have been developed where nonverbal behavior has been used to assess

intellectual functioning. For example: The Leiter International Performance Scale, Peabody Picture Vocabulary Test, and the Raven's Progressive Matrices.

Nonverbal tests of intelligence have been used in situations where the more popular intelligence tests are not appropriate. With special populations like the deaf, mentally retarded, physically handicapped and some emotionally disturbed, nonverbal intelligence tests (i.e. Leiter, Raven, and Peabody) can be used more suitably than the more popular IQ measures.

These nonverbal tests of intelligence are based on the assumption that nonverbal tasks can be related to intellectual functioning, such as that measured by the Stanford-Binet and the Wechsler Scales.

The advantage of using a nonverbal intelligence test is that it would bypass the language deficit in the deviant child. The disadvantage, however, is that each of these nonverbal tests is still highly structured and requires some rapport between the examiner and the subject. The test responses of the children described here would still be subject to the influence of the examiner and the demands of the testing situation.

Such children need a nonverbal, nondemanding, non-structured testing situation. This thesis proposes that children's play behavior could be used as a measure of intelligence. If play behavior was used it would be a way of testing children with language or relationship difficulties that would

bypass the problems of verbalness, rapport, and the demands of the traditional testing situation.

Play Behavior and Intellectual Functioning

Play has intrigued psychologists for many years. Britt and Janus (1941) reported that in the period between 1930-1939 over 70 empirical studies on play had been published. Their comprehensive review of the literature contained 125 references. However, few seem relevant to the present issue. Some of these authors have suggested that children play different ways for different reasons. A few have considered the issue of the relationship between play and intelligence.

Lehman and Witty (1928) investigated the relationship between play and intelligence through the use of their play quiz questionnaire. This quiz asked persons from 5 to 22 years of age to rate 200 play activities in terms of those activities engaged in during the previous week, those which give the most fun, those to which the most time was devoted, and finally those activities in which the person participated alone. They found that "bright" pupils (IQ 107-163) participated in fewer activities of a motor type and more frequently participated in activities which required reading as compared with "dull" (IQ 58-93) and "normal" (IQ 94-106) pupils. According to Lehman and Witty, the bright children were also less interested in religious activities, displayed a livelier sense of humor, and

were less social.

Terman (1925) studied the play activities of 643 gifted children. Using a questionnaire presentation, Terman had his subjects rate 90 play activities with respect to interest and time devoted to them. Terman concluded that the gifted are somewhat more interested than the control pupils in intellectual and sedentary games.

Lehman and Witty (1928) reported a study by Lewis. Lewis found that versatility in play interest is not strongly associated with IQ. She also found that children of low IQ were more social in their play than normal children or children of high IQ. Lewis used the Terman Group Test and the National Intelligence Test as measures of intelligence.

Boynton and Ford (1933) investigated the relationship between time spent in play and intelligence. There were two groups of children: Group A ($N = 13$, IQ range 108-128); Group B ($N = 13$, IQ range 64-95). It was found that the average bright child spent 45 to 50 minutes more time in play than the average dull child.

In contrast, Lehman and Doxey (1928) studied the influence of chronological age versus mental age on play behavior. They found that chronological age was more potent than mental age in influencing the play behavior of boys.

Clune (1973) did an experimental study of play behavior and intelligence. She investigated the relationship between

the quality of play behavior and level of intelligence. Play behavior was rated during 20-minute play sessions and scored according to a play scale developed by Foley (1962). Intelligence was measured by the Stanford-Binet and the WPPSI.

For the total group of subjects age 4 years-5 months to 6 years-5 months Glune reported a significant correlation of .40 between the Quality of Play ratings based on the total time spent in play (QPT) and the Full Scale IQ for the WPPSI and a significant correlation of .30 for the Full Scale IQ for the play scores for the actual time (QPA) the child played and the WPPSI. Lower correlations were obtained between the same play measures and S-B measures (.28 and .17 respectively).

In summary, the empirical studies reported above tend to support the hypothesis that the level of intelligence is associated with several aspects of play behavior.

Play as an Aspect of Cognitive Development

The relationship between play behavior and cognitive development has been studied by the French psychologist, Jean Piaget. Jean Piaget has devoted his life to the study of intelligence and cognitive functioning. In his investigations Piaget has found many parallels between intellectual development and biological development. Piaget (1967) stated:

The Psychological Development that starts at birth and terminates in adulthood is comparable to organic growth. Like the latter, it consists essentially of activity directed toward equilibrium. Just as the

body evolves toward a relatively stable level characterized by the completion of the growth process and by organ maturity, so the mental life can be conceived as evolving toward a final form of equilibrium represented by the adult mind. In a sense development is a progressive equilibration from a lesser to a higher state of equilibrium. From the point of view of intelligence, it is easy to contrast the relative instability and incoherence of childhood ideas with the systematization of adult reason (p. 3).

While not correlating or measuring the relationship between play and cognitive development, Piaget hypothesized that intellectual functioning proceeds according to a definite sequence of development. This sequence is marked by a number of stages each with its own type of organized mental activity. Piaget described a number of stages of play which correspond to various stages of cognitive development.

Certain similarities can be noted between the Quality of Play scale used in the present investigation (Foley, 1962) and the developmental stages of play as presented by Piaget. While the Quality of Play measure will be described in greater detail later (also see Appendix A) it may be noted that play activities are rated on a 7-point scale where 1 point represents the lowest level of play activity (touching or holding a toy with little examination or manipulation) and 7 points represents the highest level (creative, sustained, and elaborated use of toys).

Piaget's first stage of the sensory-motor period (the primary circular reactions) is not reflected, however, by the lowest level on the Quality of Play scale. These primary circular reactions involve the infant's actions with himself, such

as thumb-sucking, and the 1 point rating on the play scale essentially involves holding or grasping a toy without seeming to explore or manipulate it.

A 2-or possibly 3-point rating on Foley's scale seems comparable to Piaget's secondary and tertiary circular reactions. Play at this level involves the manipulation and extensive exploration of objects. However, Foley's 3-point rating appears to include more sustained, purposeful activity than Piaget's tertiary circular reaction.

Piaget's preconceptual stage of play could be seen as similar to the 3 and 4-point ratings on the Foley's scale. At this stage, play behavior is sustained for longer periods and there is purposeful manipulation of toys or objects to make something or do something. It appears that play behavior at the 4-point level shows the first suggestion that fantasy behavior may be involved. That is, the child uses toys to represent events or people who are not present. In general, this fantasy play is not sustained or elaborated sufficiently so that its purpose and what it represents is made clear to an adult.

Piaget's stage of intuitive play is similar to the 5, 6, and 7-point ratings described by Foley. Here fantasy play is evident and tends to be of longer duration.

Piaget's final stage of play is more peer oriented and often concerns itself with games with rules. Since Foley's scale has been used to rate solitary play behavior, it does not have a

parallel in Piaget's stages.

Research Design

Ideally, the validation of a nonverbal measure of disturbed children's cognitive intellectual functioning based on play behavior would use nonverbal, disturbed children as subjects. Further the assessment of concurrent validity would be achieved by comparing the data from the play measure with scores on a standardized measure of intelligence. However, this approach is impossible (or would present severe difficulties) since, as noted previously, the subjects of interest are largely untestable on the usual measures of IQ.

The present research utilizes an approach which is recognized as a compromise and is admittedly exploratory. Specifically, the play records of normal children with verbal content deleted were used to investigate the relationship between the play ratings and IQ as assessed by the WPPSI and the Stanford-Binet. Although the findings will not be directly generalizable to children who are culturally different, deficient in language function, or severely emotionally disturbed, correlations comparable to those found by Clune would suggest that this approach might be used with some validity with such children.

In summary, the purpose of this research was to investigate the relationship between intelligence test scores and the Quality of Play scores obtained from normal children when the play protocols were scored with all verbalizations eliminated.

The comparisons of the IQ and play scores obtained under the verbal and nonverbal approaches were viewed as one possible approach to checking the effect of nonverbalness in the play setting.

Chapter II

Method

Subjects

The subjects were 100 Caucasian, middle-class children, 50 boys and 50 girls, between the ages of 4 years and 5 months and 6 years and 5 months. The subjects were chosen so that two boys and two girls were included at each of the 25 year-month levels between 4 years and 5 months and 6 years and 5 months, e.g., 4 years-5 months, 4 years-6 months.

The initial testing session for each child was scheduled within the period extending from 15 days before to 15 days after the child's year-month age level. For example, a child who occupied the cell of 5 years and 1 month initially was tested within a period from 15 days before to 15 days after the day he had attained the age of 5 years and 1 month. The mean Stanford-Binet IQ for all subjects was 112 with a standard deviation of 15.8. The mean Wechsler Preschool and Primary Performance Scale of Intelligence Full Scale IQ was 106 with a standard deviation of 14.1.

The subjects were screened to exclude those with neurological difficulties. They were volunteers whose parents responded either to a letter sent from several Catholic grade schools or to a personal request by one of the examiners.

Measures

The measures of intelligence were the Wechsler Preschool and Primary Scale of Intelligence (WPPSI) and the Stanford-Binet Intelligence Scale Form LM (SB). Each test was administered according to the instructions included in their respective manuals (Wechsler, 1967; Terman & Merrill, 1960).

The measures of each subject's play behavior were based on a 20-minute observation of each subject's play behavior with a standard group of toys. The initial records of these observations consisted of the observer's observations of each child and his accompanying verbalizations (transcribed from a tape recording of the play interview).

Play protocols were rendered nonverbal by persons other than the investigator, using a predetermined method not then known to the investigator. Each protocol was divided into small one to several entry segments and then re-assembled in the original order. The verbalizations were removed at such break points but since all records were broken and re-assembled in the same quasi-random fashion there was no way for the investigator to guess the total quantity of verbalization removed from the record or whether verbalization had or had not been removed at any given break point.

The Quality of Play scores used in this study were based on a scale developed by Foley (1962). Each play activity was rated on a 1-7-point scale. One point represented the lowest

level of play activity (touching the toy with little examination or manipulation) and 7 points the highest level (elaborate, creative use of the toys). A Quality of Play rating was assigned only to a play activity that involved using one of the standardized toys (see Appendix A for details on scoring).

The first score computed for this study, Quality of Nonverbal Play/Actual (Q-NVP/A) expressed subjects' average Q-NVP level in terms of time actually spent in play. That is, the 1-7 point ratings of each play activity was multiplied by the time spent in that activity, the product summed, and the total divided by the total time subject actually spent in all scorable play activities.

A second score was similar to the Q-NVP/A but expressed subjects' average Quality of Play in terms of the total time available for the play (20 minutes), i.e. Q-NVP/T. For each subject the original scores obtained by Clune (1973) were available.

The reliability of the scoring scales was reported by Foley (1962). An estimate of interscorer agreement was obtained by the present author and Clune who independently rated 20 play protocols which included the verbalizations. These ratings were not performed until the author had completed all of the ratings of the nonverbal versions of these protocols. The Pearson product-moment coefficient of correlation was computed on the basis of these scores and was .97 for Quality of Play

for total session time.

Procedure

Each child was administered the WPPSI and the SB. These IQ tests were administered in counterbalanced order on two occasions, generally one week apart. The tests were administered by four, second-year graduate students in clinical psychology. All examiners had completed a course in intelligence testing and had experience in administering the WPPSI and SB. Each of the examiners tested approximately one quarter of the subjects and administered all measures to the same child in order to minimize examiner effects.

On the day of the second testing after all tests had been administered, the child participated in the standardized play situation. Each child was taken to a room which was approximately 15 feet by 20 feet by an examiner. The examiner was a female doctoral candidate who had experience in working with children and who was thoroughly familiar with the Quality of Play Scale. In the room were the following toys: a family of dolls including father, mother, sister, brother, and baby, a family of bear dolls including papa bear, mama bear, and baby bear; assorted blocks of various shapes and colors; a wooden mallet; a one-pound can of Play Doh clay; two boxes of large size crayons; paper for drawing; a play telephone; and a small wooden wagon suitable for giving the families rides. The child

was instructed that he could play with any or all of the toys. While the child played, the examiner sat at the desk in the room and recorded the child's activities and the time elapsed for each. Interaction between the child and the examiner was not encouraged, but she responded to questions and comments directed to her. After 20 minutes, the play session was terminated. The examiner later divided the child's play into units of action and Quality of Play scores were then computed.

The test data were gathered during the period of one year commencing in the spring of 1969 and terminating in the spring of 1970. All the testing took place at the Loyola University Guidance Center.

Chapter III

Results

As a prelude to presenting the results of this investigation, Table 1 contains the descriptive statistics for the samples used in this study. Table 1 shows the means and standard deviations by age of boys and girls for Quality of Nonverbal Play (for the total session time as well as the actual time spent in scorable play), and the scores on the two measures of intelligence (WPPSI and the Stanford-Binet). The scores on both IQ tests were somewhat above average, especially for boys on the Stanford-Binet Intelligence Scale. The standard deviations for both IQ measures were similar to those reported in the manuals.

As background for the comparison of the play ratings and IQ, the Pearson product-moment correlations (r_s) between the WPPSI and Stanford-Binet Intelligence Scale for all children in the sample are presented in Table 2. The r_s obtained for this sample are comparable to those reported in the manual.

Tables 3 and 4 present the results of the correlations between the ratings of verbal and nonverbal play behavior and IQ. The Pearson correlation was again used to test the relationship between Quality of Nonverbal Play (for the total session time as well as the actual time spent in play) and each of the following variables: WPPSI Scores (Verbal, Performance,

Table 1

Means and Standard Deviations for Quality of Nonverbal
Play Scores and Intelligence Scores and Age (in months) for Boys and Girls

Boys--Age						Girls--Age					
		53-59	60-65	66-71	72-77	Total	53-59	60-65	66-71	72-77	Total
Quality of Play											
Total Time	<u>M</u> <u>SD</u>	3.68 1.38	4.44 1.09	4.03 .92	4.64 .67	4.18 1.10	3.93 .68	3.34 1.39	3.85 .84	4.43 1.24	3.89 1.10
Actual Time	<u>M</u> <u>SD</u>	3.91 1.16	4.75 .85	4.27 .78	4.77 .72	4.41 .95	4.03 .66	3.95 .84	4.21 .81	4.77 .95	4.23 .85
Intelligence											
WPPSI VIQ	<u>M</u> <u>SD</u>	101.79 19.27	108.00 15.24	107.67 11.20	100.75 10.31	104.44 14.61	99.29 27.76	103.25 20.40	100.83 13.07	103.67 10.89	101.66 19.14
PIQ	<u>M</u> <u>SD</u>	104.71 17.05	114.67 15.25	104.67 13.07	108.58 10.47	108.02 14.46	103.21 11.46	101.58 20.36	108.33 13.79	106.92 13.23	104.94 14.74
FIQ	<u>M</u> <u>SD</u>	103.57 18.10	112.17 16.55	106.83 11.99	104.92 8.69	106.74 14.44	106.21 12.26	102.83 20.63	104.75 13.77	106.00 10.41	105.00 14.29
Stanford-Binet IQ	<u>M</u> <u>SD</u>	109.50 17.52	116.92 15.77	114.92 13.29	106.58 12.26	111.88 15.09	117.50 17.53	112.42 21.77	113.50 14.48	108.00 11.18	103.04 16.59
MA	<u>M</u> <u>SD</u>	61.57 9.91	72.17 8.97	77.50 8.33	79.17 9.46	72.16 11.43	65.64 10.72	69.67 12.35	76.42 9.12	79.67 6.64	72.56 11.18

Table 2

Correlation Coefficients Between the Stanford
Binet IQ's and WPPSI Verbal, Performance and
Full Scale IQ's for Boys, Girls, and Total N

Stanford Binet			
WPPSI	Boys (<u>N</u> =50)	Girls (<u>N</u> =50)	Total
VIQ	.87	.56	.68
PIQ	.68	.55	.60
FIQ	.87	.79	.82

Table 3

Correlation Coefficients Between Quality of Play Scores
(Verbal and Nonverbal) for Total and Actual Time and
Intelligence and Age Scores for Boys and Girls

Quality of Play

	Boys (N=50)				Girls (N=50)			
	Total Time		Actual Time		Total Time		Actual Time	
	Verbal	Nonverbal	Verbal	Nonverbal	Verbal	Nonverbal	Verbal	Nonverbal
WPPSI								
VIQ	.36*	.36*	.32**	.32**	.15	.15	.04	.05
PIQ	.50***	.50***	.50***	.49***	.30*	.32**	.17	.21
FIQ	.48***	.48***	.45***	.45***	.31*	.32**	.12	.16
Stanford-Binet								
IQ	.29*	.30*	.27*	.28*	.29*	.29*	.07	.07
MA	.40**	.42***	.38**	.40**	.36**	.36**	.25*	.26*
Age (in months)								
	.26	.28*	.28*	.26*	.12	.12	.27*	.28*

* p < .05
 ** p < .01
 *** p < .001

Table 4

Correlation Coefficients Between Quality of Play Scores
(Verbal and Nonverbal) for Total and Actual Time and
Intelligence and Age Scores for Total N

Quality of Play

	Total Time		Actual Time	
	Verbal	Nonverbal	Verbal	Nonverbal
WPPSI				
VIQ	.25**	.25**	.17*	.18*
PIQ	.41***	.42***	.35***	.36***
FIQ	.40***	.40***	.30***	.32***
Stanford-Binet				
IQ	.28**	.29**	.17*	.17*
MA	.38***	.38***	.32***	.33***
Age (in months)				
	.19*	.20*	.26**	.27**

* p < .05
 ** p < .01
 *** p < .001

and Full Scale IQ), Stanford-Binet IQ, MA and chronological age for boys, girls, and total N. For purposes of comparison, Tables 3 and 4 also show the rs for the Quality of Verbal Play measures and the measures of intelligence and age reported by Clune (1973).

Tables 3 and 4 show that the Quality of Nonverbal Play scores taken for the entire 20-minute play session (QPNV/T) and the actual time spent in scorable play (QPNV/A) correlated significantly with all the measures of IQ and mental age for the total sample. Table 3 also shows there was a stronger relationship between Quality of Nonverbal Play scores and intelligence scores for boys than for girls. In addition the performance IQ especially for boys correlated better with the play scores than the verbal IQs.

An examination of Tables 3 and 4 shows that one cannot say which Quality of Nonverbal Play score is a better predictor of intelligence since it depends on sex.

A comparison of the results of this study and the data reported by Clune (1973) show that they are about the same. The majority of rs were similar for Verbal and Nonverbal Play and IQ with changes of .01 or .02 generally suggesting that correlations for Nonverbal Play scores were slightly higher than those for Verbal Play. There are no major shifts in significance. This suggests that to use only Nonverbal Play behavior to compute the Quality of Play score does not alter

the relationship between Quality of Play and intelligence. Little is changed when verbal behavior is excluded.

Table 3 also shows a stronger relationship between Quality of Play scores (Verbal and Nonverbal) and the WPPSI Performance and Full Scale IQ than for the Stanford-Binet IQ. This is true especially for boys. These results suggest that the Quality of Play scores may relate to the performance components of the WPPSI.

These results provide further empirical support for the hypothesis that play is an aspect of cognitive development and related to intelligence as measured by traditional tests. These results also support the hypothesis that Quality of Nonverbal Play is related to intelligence as measured by traditional IQ tests.

It was of interest in this study to examine the relationship between Quality of Nonverbal Play and Intelligence scores by chronological age. The purpose was to see how well Quality of Nonverbal Play was predicting intelligence across age groups.

Tables 5 and 6 present these subcomparisons by age for boys, girls, and total N. Table 5 presents this data for total session time and Table 6 for the actual time spent in play.

Tables 5 and 6 indicate there is no consistent trend between play measures and IQ for the four age groups. Although it may be noted that there were more significant rs in the youngest (53-59 months) and in the oldest (72-77 months) age

groups.

A comparison of the correlations presented in Tables 5 and 6 suggested that Quality of Nonverbal Play (total session time) was a better predictor of IQ than Quality of Nonverbal Play (actual time) for boys and girls across the age groups.

Table 5 also shows that in the oldest group (72-77 months) the correlations between the play and IQ measures show relatively higher correlations for the girls which are more comparable to those obtained for the boys. Thus Quality of Nonverbal Play (total session time) significantly predicts WPPSI Full Scale IQ and MA for both boys and girls.

Table 5

Correlation Coefficients Between Quality of
Nonverbal Play Scores (Total Session Time),
Intelligence Scores, and Age for Total N
by Chronological Age

Quality of Nonverbal Play (Total Session Time)

		Age (Months)			
		<u>53-59</u>	<u>60-65</u>	<u>66-71</u>	<u>72-77</u>
WPPSI					
VIQ	Boys	.51*	.40	.08	.27
	Girls	-.15	.29	.51*	.30
	Total	.20	.36*	.32	.26
PIQ	Boys	.73***	.41	-.03	.48
	Girls	-.10	.18	.58*	.58*
	Total	.51**	.37*	.25	.55**
FIQ	Boys	.69**	.41	.04	.50*
	Girls	-.08	.26	.58*	.57*
	Total	.49**	.39*	.32	.52**
Stanford-Binet					
IQ	Boys	.50*	.30	-.06	.42
	Girls	.31	.25	.42	.65**
	Total	.43**	.29	.19	.52**
MA	Boys	.41	.37	.09	.49*
	Girls	.32	.23	.38	.56*
	Total	.37*	.30	.24	.47**
Age (in months)					
	Boys	-.37	.24	.51*	.54*
	Girls	-.05	-.26	-.19	-.49*
	Total	-.19	-.04	.18	-.12

* $p \leq .05$

** $p \leq .01$

*** $p \leq .001$

Table 6

Correlation Coefficients Between Quality of Non-verbal Play Scores (Actual Session Time), Intelligence Scores and Age for Total N by Chronological Age

Quality of Nonverbal Play (Actual Session Time)

			Age (Months)			
			<u>53-59</u>	<u>60-65</u>	<u>66-71</u>	<u>72-77</u>
WPPSI						
VIQ	Boys		.44	.35	.12	.24
	Girls		-.11	-.08	.44	.16
	Total		.17	.15	.30	.19
PIQ	Boys		.65**	.43	-.04	.59*
	Girls		-.10	-.13	.55*	.49*
	Total		.44**	.25	.26	.52**
FIQ	Boys		.59**	.40	.06	.55*
	Girls		-.08	-.10	.53*	.41
	Total		.41*	.22	.32	.46**
Stanford-Binet						
IQ	Boys		.39	.30	-.01	.45
	Girls		.29	-.20	.27	.47
	Total		.35*	.06	.14	.46**
MA	Boys		.28	.34	.14	.53*
	Girls		.29	-.19	.20	.38
	Total		.28	.08	.17	.43*
Age (in months)						
	Boys		-.48*	.07	.57*	.53*
	Girls		.02	.17	-.35	-.38
	Total		-.23	.11	.10	.01

* p .05
 ** p .01
 *** p .001

Chapter IV

Discussion

The main results of this study established significant relationships between nonverbal play and both measures of intelligence as measured by traditional intelligence measures. These results support the general hypothesis that cognitive development is a multifaceted phenomenon and it is possible to assess intelligence in other ways than by administering an intelligence test.

The results supported the specific hypothesis in this investigation; namely, that nonverbal play is an aspect of cognitive development and can be related to intelligence as measured by traditional intelligence tests.

The results from Table 2 showed that the correlations between the WPPSI and S-B IQs were substantially higher for boys than for girls (Verbal IQ: $r = .87$ for boys, $.56$ for girls; Performance IQ: $r = .68$ for boys, $.55$ for girls; Full Scale IQ: $r = .87$ for boys, $.79$ for girls). These sex differences were not expected and might result from the peculiarity of the sample used in this study. Further research should attend to possible sex differences in standard IQ test results which have not yet been isolated. Similarly, the correlations between the Quality of Play scores and IQ (Tables 5 and 6) fluctuated to some degree, but the correlations for boys were consistently higher than those for girls.

For both tests of intelligence and both Quality of Play indicates the boys' correlations were substantially higher than the girls' in the lower two age categories. This tendency did not hold in the higher two age categories with the girls having more significant correlations in the third age category. While the rs between IQ and the play measures fluctuated slightly, the correlations for girls and boys were most similar in the oldest group (72-77 months). Thus the highest correlations between IQ and Quality of Play for girls were obtained at the oldest age level.

The varying relationships between IQ and Quality of Play that were evidenced in these comparisons of the four age subgroups may also be reflected in the variations in the correlations between chronological age and Quality of Play (Tables 5 and 6). It is interesting to note that the correlations for chronological age and QNVP/T for boys ranged from $-.37$ for the youngest group to $.54$ for the oldest group. Similar correlations were also obtained for QNVP/A session time ($-.48$ for the youngest group, $.53$ for the oldest group). In contrast, the corresponding correlations for girls showed the opposite trend ($-.05$ and $.02$ for the youngest group; $-.49$ and $-.38$ for the oldest group).

As noted previously with respect to sex differences in the IQ-Quality of Nonverbal Play correlations, these variations may be specific to the sample used in the present study. However,

it appears that future work in this area should investigate the possibility of varying relationships between the measures of IQ, play, and age. At present, the reason for the obtained variations is not apparent.

While it was hoped that a nonverbal measure of the Quality of Play would be a useful measure of intelligence, it was not anticipated that the nonverbal play measure would be as powerful as a play measure with the verbalness included since, traditionally, verbal IQ has been a good predictor of global IQ. An examination of Table 3 has shown no significant difference in the rs for verbal and nonverbal play and intelligence. One can, therefore, conclude that the presence or absence of verbalness has no significant influence in the assessment of the Quality of Play being scored. These results lead one to conclude that it would be worthwhile to continue to study nonverbal, non-structured, noninteractive measures of intelligence. These results also provided some hope that measures of nonverbal play behavior may be used to supply an estimate of intellectual functioning in children who are in fact nonverbal.

At this point one caution should be made. This study did not validate the use of nonverbal play behavior as measured by the Foley scale as a substitute for measuring IQ in a nonverbal child. One should consider that the protocols in this study were artificially rendered nonverbal and the results do not necessarily mean that a truly nonverbal child would function in

the same way as children of the present sample.

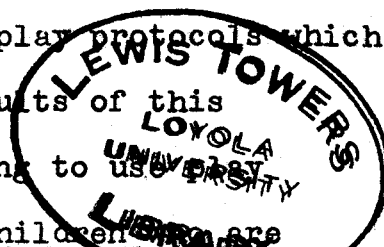
Chapter V

Summary

The purpose of this thesis was to investigate the problems involved in making an intellectual assessment of children who have language deficits and difficulty in relating to others. The problems involved are the issue of rapport, the demand of the testing situation, and the relative nonverbalness of the child.

This thesis proposed a solution to some of these problems by investigating the relationship between nonverbal play behavior and intelligence. Observations were made of the free-play behavior of 50 boys and 50 girls who were between 4 years 5 months and 6 years 5 months of age. Although these subjects were verbal, the obtained protocols were rendered nonverbal and were rated according to a scale designed to measure Quality of Play. The play measures were then correlated against standard measures of intelligence (WPPSI, S-B).

The results of this study established significant relationships between nonverbal play behavior and intelligence as measured by these traditional intelligence tests. The obtained relationships were comparable to the corresponding correlations between IQ and QP obtained for the original play protocols which included children's verbalizations. The results of this investigation represent a first step in trying to use play behavior to validly assess intelligence in children.

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nonverbal and who cannot take traditional intelligence tests.

References

- Anastasi, A. Psychological testing, (3rd ed), New York: Macmillan, 1968.
- Boynton, P. L., & Ford, Z. A. The relationship between play and intelligence. Journal of Applied Psychology, 1933, 17, 294-301.
- Britt, S. H., & Janus, S. Q. Toward a social psychology of human play. Journal of Social Psychology, 1941, 13, 351-384.
- Clune, C. The relationship of quality of play and intelligence in young children. Unpublished doctoral dissertation, Loyola University, 1973.
- Dunn, L. Peabody Picture Vocabulary Test. Minneapolis: American Guidance Service, 1959.
- Foley, J. Children's responses to frustration: Relationship with child-rearing practices and infant reaction patterns. Unpublished doctoral dissertation, Northwestern University, 1962.
- Goodenough, F. L. Mental testing: Its history, principles and applications. New York: Rinehart, 1949.
- Lehman, H. C., & Doxey, A. W. The influence of chronological age vs. mental age on play behavior. Journal of Genetic Psychology, 1928, 35, 312-324.

- Lehman, H. C., & Witty, P. A. A study of play in relation to intelligence. Journal of Applied Psychology, 1928, 12, 369-397.
- Leiter, R. G. Leiter International Performance Scale. Chicago: Stoelting, 1948.
- Palmer, F. Sociometric status and intellectual performance among Negro preschool boys. Developmental Psychology, 1970, 3: 1-9.
- Piaget, J. Response to Brian Sulton-Smith. Psychological Review, 1966, 73, 111-112.
- Piaget, J. Six psychological studies. New York: Random House, 1967.
- Raven, J. C. Standard progressive matrices. London: H. K. Lewis, 1960.
- Terman, L. M. Genetic studies of genius: Vol I. Mental and physical traits of a thousand gifted children. Stanford: University Press, 1925.

APPENDIX A

I. Scoring Manual for Units of Action

The Units of Action (UA) score for Play 1 or Play 2 consists of the total number of units occurring during the first 20 minutes of each period. In general, an activity is scored as a separate unit when S's behavior suggests a change in goal or focus of attention.

The time spent in the action assigned a UA rating is noted for each unit. When a unit is not complete because of the 20-minute limit, the elapsed time for the activity occurring prior to this limit is assigned to the unit. Activity involved in the transition from one activity to another is not scored as a separate unit when S's intention is obvious and no loitering occurs. In this case, the time interval between the activities is counted with the new activity. However, when the transition involves a delay, distraction, or unnecessary wandering, it is scored as a separate unit.

Criteria for Scoring Units of Action

1. Different activities with different objects.

A single complete activity preceded and followed by different activities in terms of objects or playthings used, focus of attention, or mode of expression is scored as 1 unit. However, an activity involving several different objects which may be meaningfully grouped together in terms of class, location, or S's undifferentiated treatment of them is scored as 1 unit. In addition, a period of rather generalized attention to a number of objects such as might occur during episodes of wandering about the room is scored as a single unit. In general, 1-unit ratings of activities involving different objects are made when the assignment of separate ratings would be difficult or impossible and the activity may be more meaningfully subsumed under a single unit such as "wandering."

Scorable as 1 unit: Building a block tower (preceded by doll play and followed by drawing)--talking to E (preceded by looking out of the window and followed by play with bears)--placing a variety of toys in the wagon without paying particular attention to any one--walking around the room and looking at different objects without becoming involved with any one object for more than a few seconds--activity around the window involving looking out, tapping fingers on sill, and poking at glass (see also UA, Sect. 4).

2. Series of different activities with the same objects.

Activities with the same objects or playthings are scored as separate units when each represents a discrete activity which would be scored as 1 unit if it occurred separately. In addition, play with the same toy or group of toys is divided into separate units when the ongoing activity would be assigned different quality of play rating (e.g., inspection versus fantasy play).

Scorable as 2 or more units: A series of drawings, each on a separate piece of paper (1 unit per drawing)--two or more drawings on a single sheet where the content of S's comments suggest they are unrelated such as a house and writing (1 unit for each separate part)--building a block structure and later using the blocks for a new structure or piling them in the wagon (2 units)--inspection or simple manipulation of a toy to see how it works followed by fantasy activity involving the toy (2 units)--pushing the blocks around aimlessly and then integrating them into a structure (2 units)--building a block structure followed by rather prolonged destruction of it and finally loading the blocks in the wagon (3 units)--making different objects from Play Doh such as a dish, snake, and person (1 unit per object)--differentiated activity and prolonged attention to toys of the same class as dressing and/or undressing members of the doll family or giving big bear and little bear separate rides in the wagon (1 unit for the activity with each member of the toy group).

Scorable as 1 unit: Repetitions of the same activity or repeated attempts to attain some goal (as rebuilding a block tower which falls)--slight variations on a single theme (as making pancakes with Play Doh)--making several different objects from Play Doh which combine into a single unit (as nest and eggs or dish with food)--rapidly executed activities with toys of

the same type when S does not treat them in a differentiated manner (as removing the shoes from all the dolls in quick succession or piling all the dolls in the wagon for a ride).

3. Interruptions or breaks in ongoing activity.

a. By activity with different objects or the same objects with different intent.

The scoring of interruptions arising from activity with different objects is a special case of different activities with different objects (Sect. 1) and, consequently, the interruption is scored as 1 unit. However, in the case of interruptions, the interpolated activity is often shorter and/or incomplete and, as such, may escape attention. This is especially true when the interruption involves activity with the same objects but the intent of the activity or quality of play level is different. In both instances, the interrupted activity, the interruption, and the subsequent activity (a different activity or the resumption of the original activity) are each scored as 1 unit.

Scorable as 3 units: Building with blocks interrupted by period of pounding a block on floor before building activity resumed--drawing interrupted to look at block and drawing resumed--fondle and talk to bear, hold carelessly while looking out of window, and return to play with bears--hammer on block, hold in hand while talking to E about dolls, and commence drawing--interrupt drawing or play with Doh to show E progress (especially involving holding up production, carrying to show E or sitting back so S is no longer engaged in activity) before resuming activity (Note: If S's attention remains focused on what he is doing suggested by continued work on production and/or talk of what he is doing, the showing is considered an overlapping activity and is not scored as a separate unit).

b. By inactivity, contemplation, loss of attention, etc.

Changes from activity to relative inactivity (sitting, standing, looking) are scored as 1 or 2 units. When the interval of inactivity suggests a period of contemplation, planning, or uncertainty about the next step in the ongoing activity and attention is focused mainly on the objects of the prior activity, the period of activity and inactivity are scored as 1 unit. If the original activity is resumed, the entire sequence is scored as 1 unit. If a different activity is initiated after the

interval the sequence is scored as 2 units.

When the original activity is interrupted by a period of inactivity suggesting loss of attention and a search for a new activity as reflected by generalized looking around, verbalizations, or movement away from the original activity, the activity and the interval are scored as 2 units. Thus, as with interruptions in general, the entire sequence including the subsequent activity is scored as 3 units regardless of whether the original activity is resumed or a different activity initiated. Even when S continued to hold an object used in the original activity, if the object appears to be temporarily forgotten and is not used, the intervening activity is scored as a separate unit.

An exception to the scoring of an interruption as a separate unit arises when the interruption is very brief (i.e., less than 10 sec.). Thus quick glances at E or other objects are not scored as separate units. For further discussion of this point see Section 4.

Scorable as 1 unit: Drawing, sits back to study handiwork and occasionally glances at E, and resumption of drawing--building with blocks, crawls around structure to look at other side, and resumes building activity.

Scorable as 2 units: Building with blocks, sits back and tape floor with block and wonders how to fit block in while looking at structure, shakes head as if unable to decide and starts conversation with E--tries to make dolls sit up in wagon, dolls fall over and S stares moodily at them, sighs and turns to play with blocks.

Scorable as 3 units: Drawing, S leans back and gazes around room and at other toys, resumes drawing activity--pulls wagon around room, pauses to look out of window while still holding wagon cord, continues to pull wagon around room.

4. Simultaneous or rapidly alternating activities.

Two activities occurring simultaneously, or in rapid alternation, where the assignment of times would be difficult are scored as 1 unit. This classification is differentiated from interruptions because the ongoing activity is either continuous or subject to only very brief (less than 10 sec.) disruptions. Glancing quickly at E or talking while engaged in play and requesting E to look at progress in ongoing activity

are the most frequent sources of simultaneous activity scored as 1 unit.

Scorable as 1 unit: Repeatedly calling attention to progress in making block structure without interrupting activity ("Look! Now I'm putting the door in . . . Look! This is going to be the window" as S places blocks)--looking quickly at E or around the room while drawing--talking to self about ongoing activity--rapid alternation of fantasy play and explanations to E (as a telephone conversation in which S talks to imaginary friend and reports what friend has said to E and what he will say to friend and then does so).

II. Scoring Manual for Quality of Play

Each unit of action involving a play activity is assigned a Quality of Play (Q-Play) rating on the basis of the 1-7 pt. scale described in the following section. Play is, by definition, any activity involving the toys provided in the experimental situation regardless of how little the activity resembles play. In turn, play activities which do not involve the standardized toys are not rated for Q-Play.

The Quality of Play/Time (Q-Play/T) score for Play 1 or Play 2 is obtained by multiplying the 1-7 pt. rating for each play activity by the time spent in that activity, summing the products, and dividing by the total time S spent in the rated play activities during the first 20 min. of Play 1 or Play 2.

The Q-Play/20 score for Play 1 or Play 2 is also obtained by multiplying the 1-7-pt. rating for each play activity by the time spent in that activity and summing the products, but the total is divided by 20 (i.e., the total time rated for quality of play in Play 1 or Play 2).

The Play 1-Play 2 Difference score is obtained for both Q-Play scores by subtracting S's Play 1 score from his Play 2 score.

Special Considerations in Assigning Ratings

Play activities interrupted by a different activity. When play with a particular toy or group of toys is interrupted by other activities the Q-Play rating is, in general, assigned on the basis of the entire sequence of units comprising a particular play activity rather than its separate parts. For example, if S leaves his drawing to look out of the window and then returns to drawing, the Q-Play rating is based on the completed drawing (or its final state if left unfinished). The time assigned to the activity includes only the time spent in the activity--not the time involved in the interruption.

Different levels of play within the same activity. When play with a particular group of toys was pursued on more than one level, each level is rated separately for Q-Play. For example, S's fantasy play with the dolls (6 pts.) was interspersed with period of inspecting the dolls' clothes (3 pts.).

Overlapping play activities. When play activities which would receive different Q-Play ratings occur simultaneously, only the activity involving the higher rating is scored. This situation is most frequent when S continues to hold a toy without using it while pursuing another play activity.

Play activities not involving contact with the toys. In

general, S's activity must involve contact with the play materials to receive a Q-Play rating. That is, merely looking at or talking about a toy is not rated. However, Q-Play is scored when the lack of contact occurs during ongoing play and S's attention remained focused on the toys as evidenced by fantasy about what is occurring, crawling around to size up the situation and making plans, or talk with E about progress (such as what S has done or plans to do). Those intervals receive the same Q-Play rating as the activity itself.

Criteria for Rating Quality of Play

A general description of the types of play behavior characterizing each level on the 1-7 pt. scoring scale for Q-Play is presented below. Specific examples of the play behavior assigned 1-7 pt. ratings for each toy or group of toys are provided in the following section.

1 Point. Touching or holding with minimal manipulation or examination.

Toy must be held in hand or touched--not merely looked at. Attention to toy is superficial and casual and frequently appears idle as if S is preoccupied with something else. True manipulation is absent--S simply handles the toy without attempting to make it do anything. Examination is limited and S does not appear concerned with how the toy is made or how it works.

2 Points. Primitive, inadequate, or undeveloped use.

Active manipulation or handling of the toy without apparent purpose. Thus S frequently appears to be doing something for the fun of it (even though it may be rather stupid), because he is bored and has nothing better to do, or while his mind is really on something else. No fantasy activity is discernable although S may state what he is doing in a factual

way. Activities at this level tend to be short, but may be long when the same action is repeated again and again.

3 Points. Investigation and purposeful activity of a non-play nature.

Examination and careful investigation of how something works or is put together. Investigation is inferred from the way S manipulates the toy and/or questions about how it works. Simple problem solving may occur as, for example, seeing whether something will come off, finding out how it fits together, or why it makes a noise. The problem need not be solved.

All activities involving organizing, cleaning up, arranging, and putting away of playthings.

Showing and explaining play creations to E when the action involves a break in the ongoing play activity. When showing and/or explaining activities overlap with the play activity, the action is rated at the level assigned to the play activity or for the activity receiving the higher rating. Seeking assistance from E.

4 Points. Appropriate activity at undeveloped level.

Play at this level creates the impression that S is really making or doing something with the play materials, but the product of the activity does not clearly reveal S's intent and S does not provide clues through conversation or fantasy. In general, the play is relatively unelaborated and involves expected and obvious uses and groupings of the toys (e.g., pounding with the hammer, playing with crayons and paper or blocks and the wagon). Play is characterized by doing something to the toy rather than having it play some role as it might in fantasy (e.g., S hits the dolls rather than having them hit each other). Directness of purpose and fantasy may exist, but neither is clear from S's actions alone. Thus many behaviors rated at this level would receive a higher rating if S verbalized the purpose of the activity or accompanied the action with spoken fantasy. Play is frequently short but may be long through repetition.

5 Points. Appropriate activity at developed level--imaginative and/or purposeful use.

Play is frequently directed toward some recognizable goal as in drawing a picture or making a block structure. The activity tends to be well sustained and is frequently completed although neither its completion nor the quality of the finished

product is important for the 5-pt. rating if the purpose is clear. Fantasy play is common, especially with the dolls and bears who are no longer inanimate objects, but the actors in S's fantasy. The fantasy episodes are generally short (a single, unelaborated incident) and S's fantasy need not be verbalized if the import of the action is apparent (as the father doll spanking the child doll).

In general, play at this level differs from 4-pt. activities in being more sustained, developed, and purposeful or imaginative although S's use and grouping of the toys is still expected and obvious. Level 5 is differentiated from level 6 in terms of the greater elaboration of the play activities, the more creative use of the toys, and the larger scope of the activity which characterizes the higher level (e.g., a small block building versus an elaborate castle or a snake versus a nest with chicken made from clay).

6 Points. Highly elaborated or creative (but relatively short) activities.

Activities which are well developed and elaborated although the use of the toys need not be particularly original. The activity is sustained and purposeful and whatever is undertaken is usually completed. Play usually involves only one type of toy (such as blocks) or expected combinations of playthings (as blocks and wagon or crayons and paper), but S fully realizes their potential. Fantasy is frequent.

Very imaginative use of the toys involving an unusual (but appropriate) combination of playthings or clever solution to a problem. The activity is frequently fairly short although occasionally S spends considerable time in executing a single original idea.

7 Points. Highly elaborated creative activities.

Play at this level combines both aspects of Level 6 in that it involves creative and imaginative use of the toys where the creativeness tends to be sustained, elaborated and developed over a period of time. Several toys or groups of toys and non-toy objects are integrated in a meaningful and appropriate, although frequently unexpected, way. Unlike Level 6 where a single idea may be developed at length, the 7-pt. play activity seems to develop as S pursues it--new elements and ideas are integrated in the course of action. Fantasy is frequent and long fantasies suggesting the same sort of elaboration of ideas as described for the toys are rated at this level even though the activity with the toys is more usual and includes less integration of toys of different types.

Examples of 1-7 Pt. Q-Play Ratings for Each ToyBears and DollsBlocks and Mallet1 Point

Touch casually--pick up and hold (not like a baby)--sit or lie on in absent way.

Touch--hold as if forgotten--jiggle in hand--run hands over--push a little in aimless way--stand on.

2 Points

Bounce and jiggle up and down--move arms or legs in aimless way--hit or poke without punishment fantasy--move to different location or wagon (not idea of pick up or ride)--sit on and push self around floor--rough tossing around--throwing--push in heap and roll on.

Push several together without building--isolated episodes of tapping or hitting together or on other objects (as if enjoys pounding)--toss around actively but aimlessly--put few in wagon without idea of picking up or load--shove around actively--destruction of a building (casual or prolonged)--stick two together with clay in idle way--scratching desk or other surface with corner.

3 Points

General inspection--finding out how to remove clothes--remove and replace shoe, etc. as simple problem (need not succeed)--more complete undressing if apparent purpose is to investigate (no fantasy)--hitting bear to learn about squeak--getting E to help with clothes or bow--put away to clean up--arrange or line up as they were at start of session.

Inspect blocks noting size, color, etc.--observe two blocks make something as two arches form circle--look at mallet, inquire about use and tap a little to try out--show E completed structure or ask advice--cleaning or clearing up by putting blocks in wagon or toy box.

Examples of 1-7 Pt. Q-Play Ratings for Each Toys cont.

Bears and Dolls

Blocks and Mallet

4 Points

Make stand, sit, or walk--push or hit together suggesting a fight--roughness that might be punishment--hold like a baby--fondling and cuddling (no fantasy)--undress dolls as activity rather than inspection (no reason specified but may involve fantasy).

Put a few blocks together as if building something or noting it will be something without further development of idea--tap on block with mallet as if for purpose--knocking apart and replacing suggesting some purpose--place a number of blocks in wagon with more enthusiasm than order (interest suggests play rather than cleaning up and purpose unspecified).

5 Points

Actors in S's fantasy who do simple things like kiss, spank, fight, take a quick ride in wagon and other single episode activities--undress one doll for bath or to fix hair (may or may not redress)--partially undress more dolls for some purpose but fantasy not elaborated--holding like baby or child and have simple conversation with or talk to.

Pile blocks in wagon for a load to take somewhere (see wagon)--simple structures (about 20 or fewer blocks) in building that shows purpose or that S says is something, e.g., towers, houses, trees--smaller structures with original idea as a slide--mallet used as hammer for tapping in blocks--blocks stuck together with clay but not used as structural aid (see 6 pts.)--destructive actions involving fantasy associated with 5 pt. building as a tree of blocks being chopped down with a block hatchet.

6 Points

Similar to 5 pts. but involves more episodes and/or characters--family goes for ride--mother sends children to store--family is undressed to go to bed--family goes to church with wagon as car--

Elaborate structures using all or most of blocks, e.g., castles, large houses, factories--fewer blocks in original building as gas station with pumps and signs--solving structural problem in building

Examples of 1-7 Pt. Q-Play Ratings for Each Toys cont.

Bears and Dolls

longer fights and arguments with integrated fantasy.

Blocks and Mallet

a high tower by sticking blocks together with clay-- building a house with wagon used to haul wood (blocks)-- careful placing of all blocks in wagon so fit flat (as when manufacturer sold them).

7 Points

Long fantasy involving the doll family in which each member tries to obtain a gift from the fish pond and, upon failing, calls upon another member and finally the bears. Different roles played realistically by S-- Blocks used to make stove on which clay pancakes are cooked for bears. Subject draws a picture while waiting for pancakes to cook and then feeds bears.

A substantial number of blocks used to build a house which then became the home of the three little pigs with the bears, as wolves, trying to get in and subsequently being trapped. Elaborate fantasy which frequently involved little contact with toys.

Crayons and Paper

Clay

1 Point

Touch or hold in hand--stand or kneel on.

Touch or hold in hand as if forgotten, often while doing something else.

2 Points

Draw a line or two or scribble in idle way (no other drawing)-- long series of drawings mostly in one color (fast and just a couple lines on each page)-- drop crayons on paper or on floor--mark up shoes or room in destructive way--shuffle papers or toss around (not lining up)--fold roughly, crumple, or sit on a pushing self around--move from one spot to another or to wagon

Squeeze, knead, pat, stick fingers into, step on, hit with mallet, break pieces off, etc. as simple activity without apparent purpose of making anything--pat on paper without making anything--stick pieces on window or other inappropriate places--removing from can and/or replacing when not part of other play--squash object with prolonged squeezing (idea

Examples of 1-7 Pt. Q-Play Ratings for Each Toy cont.

Crayons and Paper

without apparent purpose--break crayons or tear paper off.

Clay

of destruction rather than preparing to make new object).

3 Points

Look at carefully and comment on colors, etc.--show E drawing as separate activity (not part of running comment during drawing)--line up paper or crayons as preparation for drawing or as clean up at end--put away in box or wagon.

Inspect label on can--look at clay and comment on color or texture--take clay out to get ready to make something or put it back in can at end (each as fairly long effort--quick removal, etc. rated with play activity itself)--showing E what has been made as separate activity (see crayons and paper)--asking for help in kneading clay or removing from can.

4 Points

Drawing that might be something even if it looks like a scribble since S spends some time and effort--elaborate scribbles in several colors--complexes of lines (unnamed), scribbles called designs or writing when they bear no resemblance--simple scribbles called something (2 pts. if not).

Rolling balls, cylinders like snakes, patting flat like pancake or anything which suggests some purpose, but object is not named and is frequently remolded into something else--calling objects something when it looks like nothing, e.g., a lump of clay called a shoe--rolling a piece with a block but not making anything recognizable.

5 Points

Simple drawings of a single unit such as a house, tree, head or flower which are recognizable--repetitious and quickly executed designs even if large--printing name (or poor but recognizable attempt)--attempts to write or print a few letters or numbers which are passable or good--drawings involving more elements

Simple objects, often designated or clearly recognizable, such as balls, snakes, apples, eggs, and pancakes--two-ball type shapes like snowmen or bears (relatively unelaborated)--simple nest with eggs--single round piece cut with can cover without fantasy of cooky--play with something

Examples of 1-7 Pt. Q-Play Ratings for Each Toy cont.

Crayons and Paper

Clay

with each very simple (a few lines) as tree, person, and flowers.

that has been made (as a ball).

6 Points

Integrated drawings and time consuming, well-executed designs--drawings resembling a picture with several elements as room with furnishings and person, house, sun, trees, etc.--one thing like a house or person elaborated--original idea as copy of toy telephone or wagon--copying a block design made previously even though execution is poor--long lettering or numbering sequences.

Cookies cut with cover of can (designated or fantasy)--other confections such as plates and food--people--animals--bird and nest--pumpkin with light and cover--in general, groups of simple objects which take time or complex single objects.

7 Points

Clever integration of clay figure and drawing as picture of a girl with well executed clay dog on leash--as relief clown carefully shaped with mallet handle and colored with crayons on paper with circus tent and other decorations.

A chicken with nest as part of farm fantasy in which farmer steals chicken in wagon, chicken is attacked by clay snake, and finally saved by S.

Telephone

Wagon

1 Point

Touch--hold--pick up and put down.

Touch--hold cord as if forgotten--sit in or rest foot in (no pushing activity)--move back and forth a little in bored way.

Examples of 1-7 Pt. Q-Play Ratings for Each Toy cont.

Telephone

Wagon

2 Points

Jiggle or toss around--dial once or twice for fun or in idle way (no suggestion of phone call--long and repetitious dialing apparently and fun of activity or noise--twirling receiver on cord--moving from one place to another without apparent purpose.

Roll or kick back and forth--twist, swing, or idly knot cord--turn over and shove around roughly--hit without idea of repair--pull a foot or two when empty without idea of trip or taking some place--toss in a few blocks or other toys without evidence of intent to clean up or get a load to haul.

3 Points

Examine by turning over--wondering about bank in bottom--dialing to find out how it works and perhaps commenting on bell--untangling cord--load in wagon or toy box as part of clean up.

Examine as words on side or wheels--use to load toys in for clean up (neat or messy)--put away in box.

4 Points

Dial and hold receiver in hand and/or listen as if a real call but no conversation or fantasy--mentions intent to call some number and dials but no listening or other follow through.

Pull around empty as if taking a trip--tap wheels with mallet as if S is mechanic but no fantasy to clarify--place a few toys in wagon and pull a short distance with possible idea of load--place a number of blocks or other toys in wagon, reason unspecified and no trip (gives idea this is fun to do).

5 Points

Making a call including dialing, listening, and saying "Hello" and/or a few words--dial, listen, and report phone is busy, no answer, or other outcome of call (not elaborated--see level 6).

Taking dolls or bears on short trips--S gives self a ride in wagon--building simple structures with blocks using wagon as floor--make a sidewalk with blocks--pile most of blocks in wagon in neat way (but not so

Examples of 1-7 Pt. Q-Play Ratings for Each Toy cont.

Telephone

Wagon

all fit flat as originally packed by manufacturer)--

Rating of play with wagon usually involved other toys and level of play determined by nature of activity (see bears, dolls, etc.).

6 Points

Telephone calls involving dialing, listening, and a conversation in which there are several exchanges with a fantasy person (may be mumbled, whispered or relatively short exchanges--extended fantasy about telephone being busy, wrong number, no answer so try another number in context of realistic use of phone.

No 6 pt. rating unless used in conjunction with other toys.

7 Points

Play with father doll including having him make a telephone call and talk as well as helping him hold crayons for writing.

No 7 pt. rating unless used in conjunction with other toys.

APPROVAL SHEET

The thesis submitted by Michael J. Downs has been read and approved by members of the Department of Psychology.

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

January 11, 1973
DATE

Jeannette M. Foley
ADVISOR'S SIGNATURE